

Global Trends in Lifespan Inequality: 1950-2015.

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1. Motivation

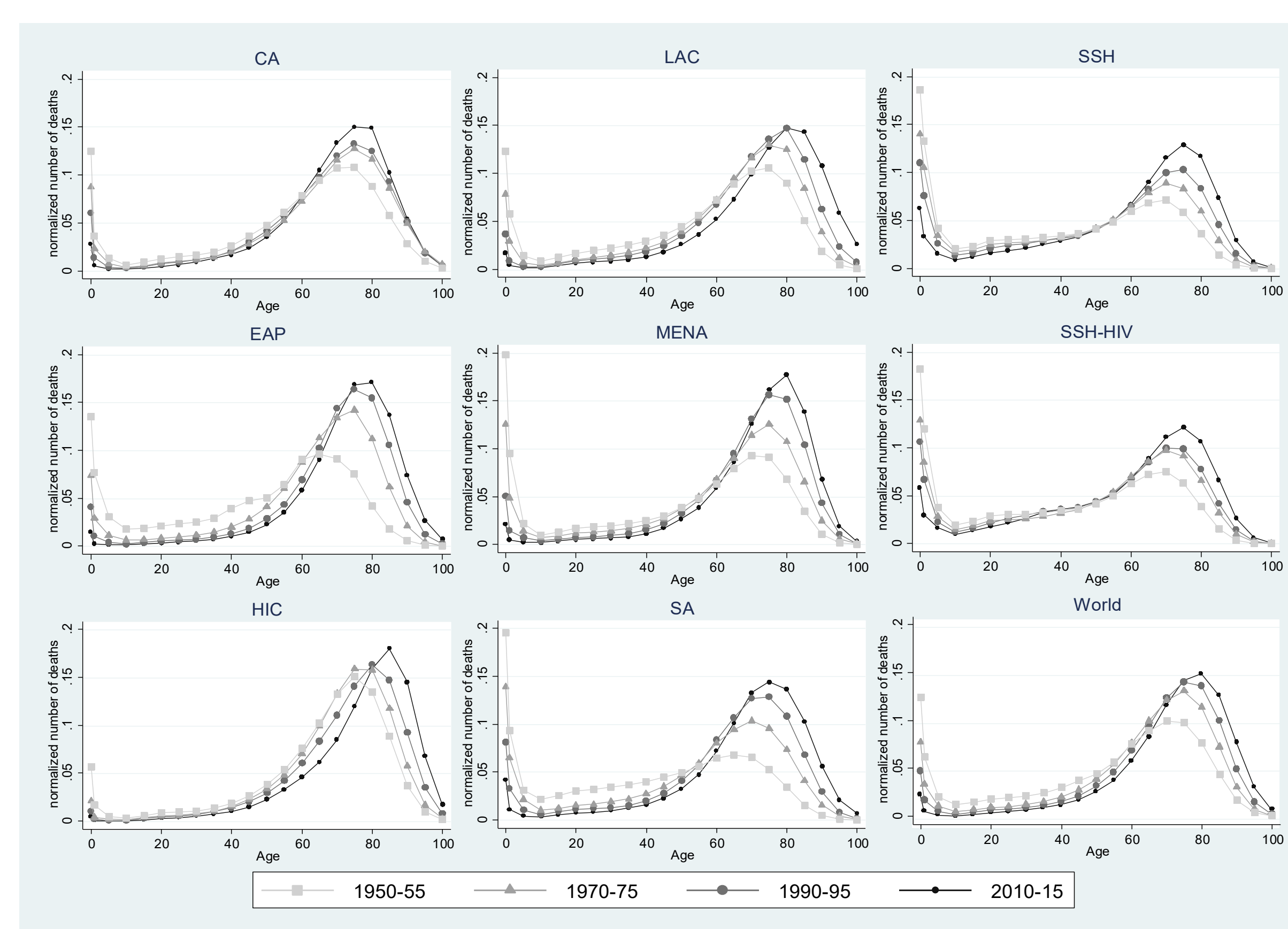
- Understanding of the present and future dynamics in human mortality
→ ‘mortality compression’ (convergence towards a single upper limit age at death) and ‘shifting’ (distribution-neutral shift with increasing life expectancy) hypotheses
- Uncertainty associated with larger lifespan inequality affects beliefs and behavior
- Study *overall*, *adult* and *elderly* mortality separately.

2. Age at death around the world

Data:

- Abridged life tables from the UN WPP (ages 0-100)
- Full population, adult population (15+), elderly population (65+).
- Time span: 1950-2015 in 5-year intervals, 195 countries

Graph: Changing distribution of deaths across regions of the world → “mortality compression” or “shifting”?



3. Measuring and decomposing length of life inequality

Inequality measures

Relative: Theil index

$$T_a = \frac{1}{l_a} \sum_{x=a}^{\omega} d_x \left(\frac{\alpha_x}{\mu_a} \right) \log \left(\frac{\alpha_x}{\mu_a} \right)$$

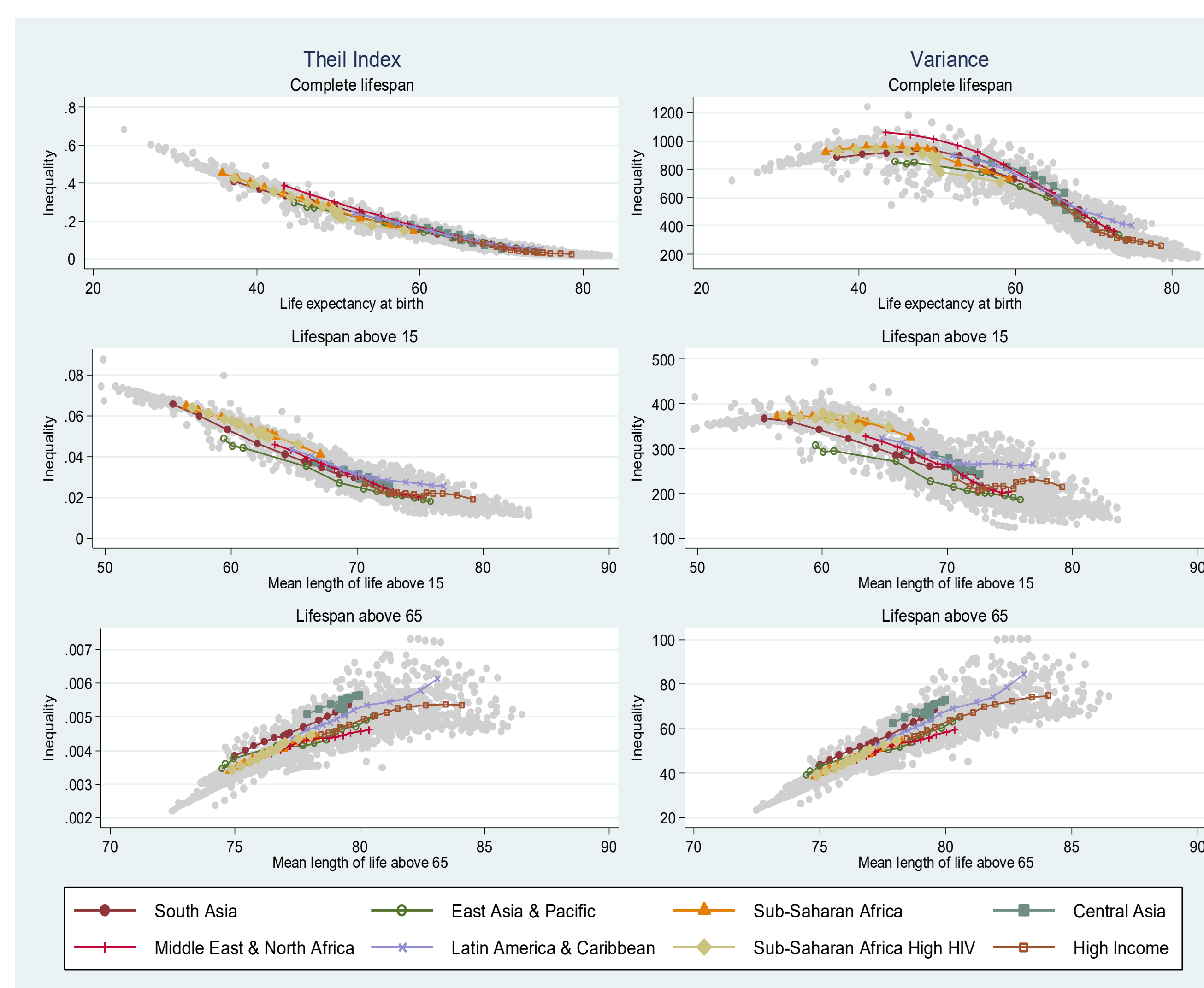
Absolute: Variance

$$V_a = \frac{1}{l_a} \sum_{x=a}^{\omega} d_x (\alpha_x - \mu_a)^2$$

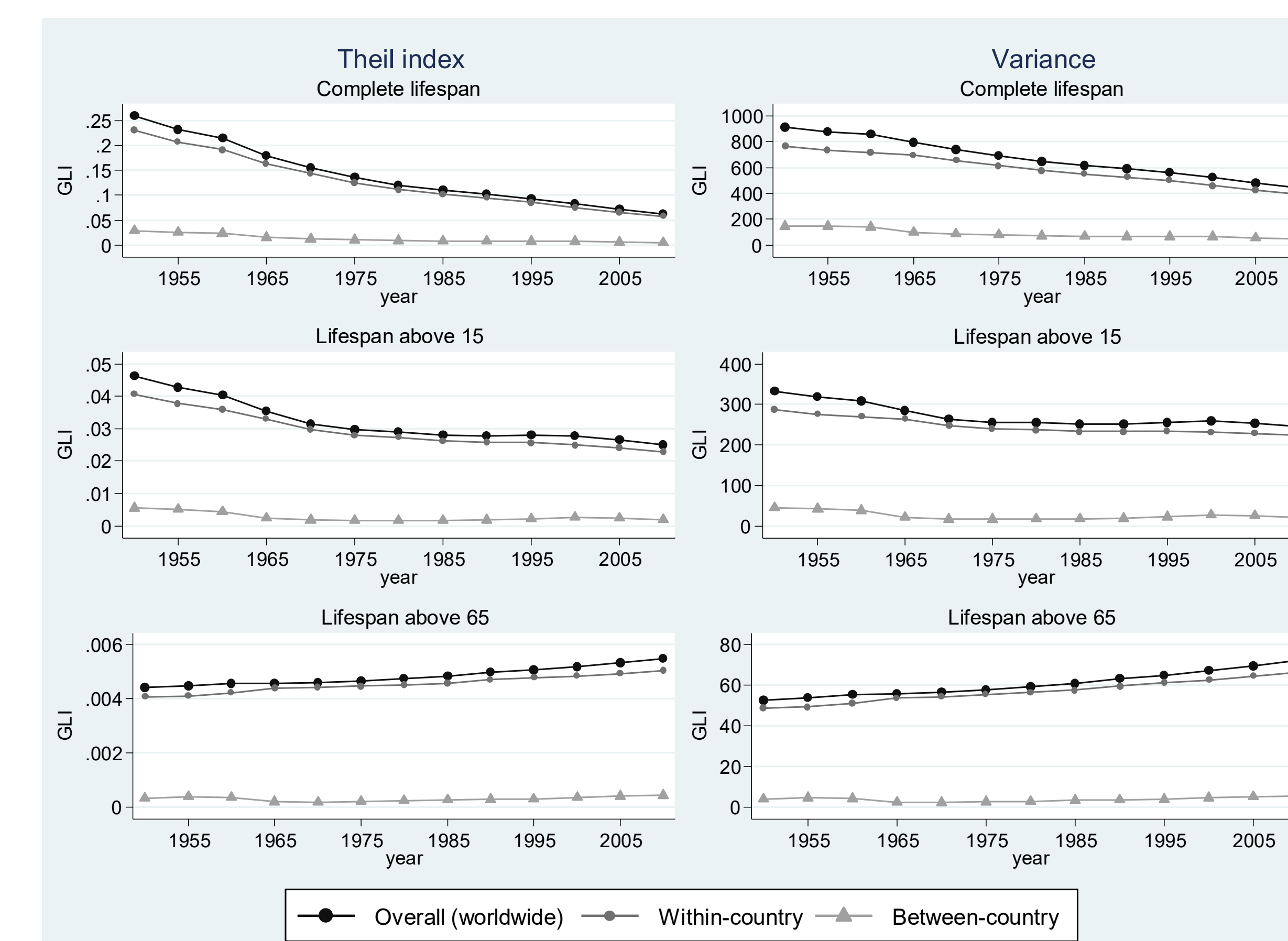
These two measures are additively decomposable into a **within-** and a **between-country** component

$$I = I_B + I_W = I(\mu_1, \dots, \mu_n) + \sum_{c=1}^n s_c I_c$$

4. Lifespan inequality and longevity within countries



5. Global lifespan inequality and its components



6. Conclusions

- There has been a sustained *decline* in *overall* lifespan inequality
- Adult* lifespan variability has also *declined*, but some *plateaus* and trend *reversals* have been identified
- Lifespan inequality among the *elderly* has *increased* virtually everywhere
- Most of the world variability in age-at-death can be attributed to *within-country* variability (around 90%)
- Our analyses suggest that the world seems to be facing a *new challenge: the emergence of diverging trends in longevity and age-at-death inequality among the elderly around the globe.*
- As larger fractions of the world population survive to more advanced ages, it will be necessary that national and international health planners recognize the *growing heterogeneity* that characterizes older populations.